

CLAIMS

1. A treatment apparatus for excrement comprising  
a reactor basin for containing the raw material and excrement, provided with at  
least two concave parts having curved profile on the bottom;  
5 a temperature control means for maintaining the temperature within said reactor  
basin at a predetermined range; and  
at least two mixing devices for mixing the raw material and excrement, matched  
with each concave parts.
2. A treatment apparatus for excrement, wherein at least two mixing devices are  
10 spaced apart each other, each of which respectively has a rotation shaft and a helical blade  
stirrer provided on said rotation shaft by a plurality of spokes.
3. A treatment apparatus of claim 2, wherein said helical blade stirrer is divided  
into two parts, helical direction of which are disposed oppositely.
4. A treatment apparatus of claim 3, wherein each part of the helical blade stirrer  
15 is provided continuously.
5. A treatment apparatus of claim 4, wherein a protuberant intersection is formed  
after said two concave parts in the bottom of said basin being overlapped, the height of  
which is lower than that of the rotation shaft of the mixing device.
6. A treatment apparatus of claim 5, wherein the curves of the concave parts are  
20 substantively spaced evenly with said mixing device.
7. A treatment apparatus of claim 6, wherein pluvimixing rings are respectively  
provided at outer side of each helical blade stirrer, on which a plurality of blocks for

loosing are provided.

8. A treatment apparatus of claim 1, wherein said reactor basin is covered by a top plate, on which a drop inlet is provided.

9. A treatment apparatus of claim 8, wherein a urinary inlet is provided with the 5 top plate of the reactor basin, spaced apart from the drop inlet by a predetermined distance.

10. A treatment apparatus of claim 9, wherein said reactor basin further comprise a conduit, the inlet of which is communicated with said urinary inlet and the outlet of which is adjacent to said drop inlet.

10 12. A treatment apparatus of claim 1, wherein said mixing devices respectively have a rotation shaft and a helical blade stirrer provided on said rotation shaft by a plurality of spokes, said helical blade stirrer overlap partially.

13. A bio-toilet, being divided into two spaces by a floor, wherein the space under the floor is provided with

15 a tank, the top plate of which having at least one drop inlet; a reactor basin for containing the raw material and excrement, provided with at least two concave parts having curved profile on the bottom; a temperature control means for maintaining the temperature within said reactor basin at a predetermined range; and

20 at least two mixing devices for mixing the raw material and excrement, matched with each concave parts.

a driving means provided outside the tank for driving the two mixing devices;

and

a control unit.

14. A bio-toilet of claim 13, wherein at least two mixing devices are spaced apart each other, each of which respectively has a rotation shaft and a helical blade stirrer  
5 provided on said rotation shaft by a plurality of spokes.

15. A bio-toilet of claim 14, wherein said helical blade stirrer is divided into two parts, helical direction of which are disposed oppositely.

16. A bio-toilet of claim 15, wherein pluvimixing rings are respectively provided at outer side of each helical blade stirrer, on which a plurality of blocks for loosing are  
10 provided.

17. A bio-toilet of claim 16, wherein a protuberant intersection is formed after said two concave parts in the bottom of said basin being overlapped, the height of which is lower than that of the rotation shaft of the mixing device.

18. A bio-toilet of claim 17, wherein the curves of the concave parts are  
15 substantively spaced evenly with said mixing device.

19. A bio-toilet of claim 18, wherein the distance between the mixing device and the concave parts is about 1cm-3cm.

20. A bio-toilet of claim 19, wherein a support is provided on the bottom plate of the tank between the two concave parts.

20 21. A bio-toilet of claim 20, wherein said temperature control means comprising a heating plate, disposed on the outer surface of the reaction basin; and a insulation layer, covered the heating plate.

22. A bio-toilet of claim 21, wherein the temperature control means further includes a holder for holding the insulation layer, one end of which is secured to the support and the other end is secured to the tank by a spring hook.

23. A bio-toilet of claim 14, wherein a drop inlet and a urinary inlet is provided 5 on the top plate of the tank, spaced apart from each other.

24. A bio-toilet of claim 23, wherein a conduit is also provided within the tank, the inlet of which is communicated with said urinary inlet and the outlet of which is adjacent to said drop inlet.

25. A bio-toilet of claim 24, wherein a plurality of dispensing holes is provided at 10 the bottom of the conduit.

26. A bio-toilet of claim 25, wherein the diameter of the dispensing holes increases gradually as they approach the outlet.

27. A bio-toilet of claim 14, wherein the top plate of the tank is assembled with the side plate of the tank in a removable manner with a heat-insulating element at the 15 juncture between the top plate and the side plate.

28. A bio-toilet of claim 13, wherein further comprise a exhaust device, provided with

an air outlet in the top plate of the tank;

an air vent tube opening to the outside; and

an exhaust fan in the air vent tube.

20 29. A bio-toilet of claim 28, wherein said exhaust fan is integrated with the air outlet.

30. A bio-toilet of claim 19, wherein a holder for said control unit is provided at the side plate of the tank.

31. A treatment method for decomposing excrement by using the treatment apparatus of claim 1, comprising the steps of

- providing a reactor basin for filling raw materials;
- providing a temperature control means for maintaining the temperature within the basin at a predetermined range
- disposing two mixing devices in reactor basin for mixing the raw material and

10 disposing a timer for detecting a time interval during which the mixing devices  
are in still state; and  
when the time interval is equal to a predetermined value, driving the mixing  
devices to stir the raw material.

32. A method of claim 31, wherein the predetermined time interval is 0.25-4  
15 hours.

33. A method of claim 32, wherein the method comprise providing a sensor for operating the mixing devices when the treatment apparatus is in usage.

34. A method of claim 33, wherein the step of providing a timer for detecting a time interval comprises driving the mixing devices if the timer interval is equal to a predetermined value.

35. A method of claim 31, wherein further comprise the step of driving the mixing devices after the usage for the treatment apparatus is completed.

36. A method of claim 31, wherein the step of driving the mixing devices comprises driving the mixing devices in a reverse direction when the mixing devices complete one turn of rotation so as to sufficiently stir the excrement.

37. A method of claim 36, wherein one turn of rotation for the mixing devices is  
5 of being driven several times.

38. A method of claim 31, wherein the range of predetermined temperature is about 50°C-70°C.

39. A method of claim 38, wherein the raw material is sawdust.